Recent Developments in Shoreline Management

Braxton Davis

Director, Science and Policy

D H E C

PROMOTE PROTECT PROSPER

Ocean and Coastal
Resource Management

Massachusetts Coastal Hazards Commission (2006 - 2007)

Shoreline Change – related recommendations:

- Map and model climate change and sea-level rise data related to coastal hazards in Massachusetts.
- Implement a program of regional sand management through policies, regulations, and activities that promote nourishment as the preferred alternative for coastal hazard protection.
  - (a) Develop a process…which (1) improves coordination between the USACE, state agencies, and municipalities, (2) identifies cost-share funds, and (3) achieves permit requirements in a timely manner…to ensure that all dredged material suitable for beach nourishment will be placed on adjacent or nearby eroding public beaches.
  - (b) Conduct a regional sand management study…
  - (c) Identify and map potential offshore and inland sources of suitable nourishment sediment.

Massachusetts Information Products

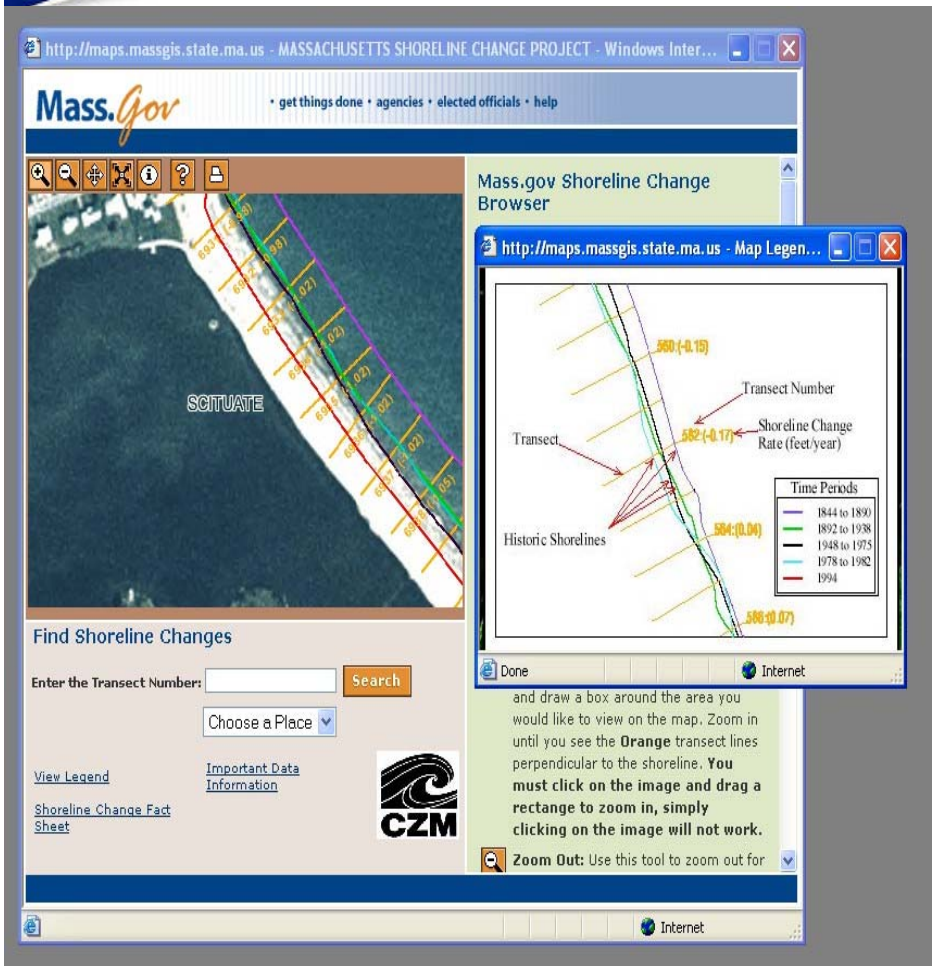
- **South Shore Coastal Hazards Characterization Online Atlas**
  - Shoreline structures, short-term shoreline changes, shoreline types, beach widths, tide ranges, wave climates, and storm susceptibility
  - Provided at 1:40,000 scale; intended to be used to review projects in areas vulnerable to coastal hazards

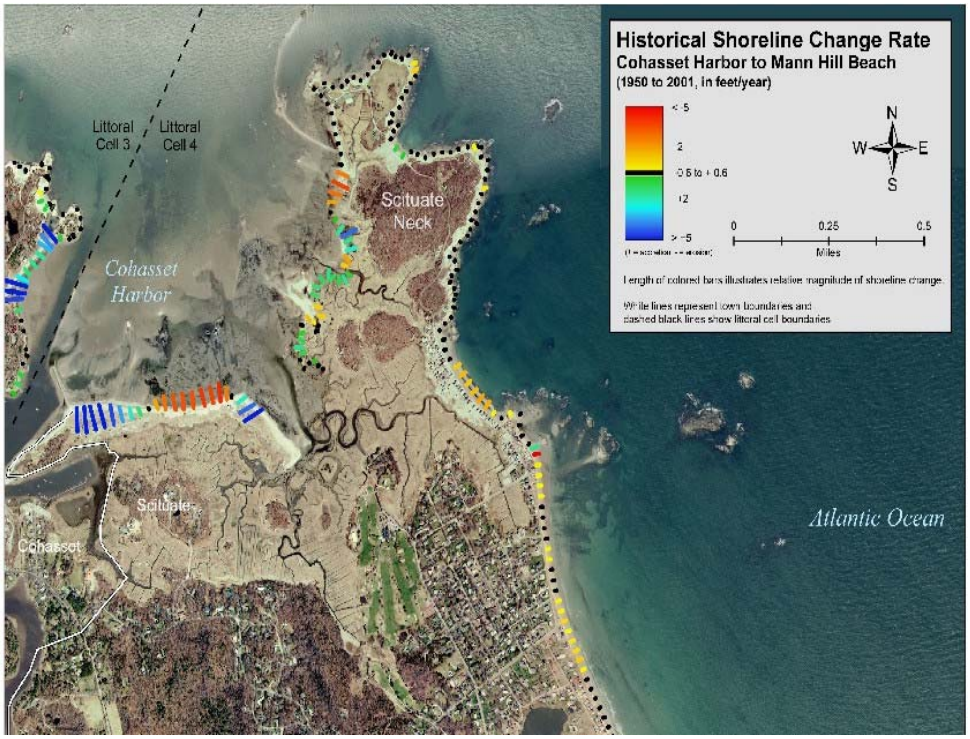
  http://www.mass.gov/czm/hazards/ss_atlas/atlas.htm

- **The Massachusetts Historic Shoreline Change Project**
  - 1:10,000 scale shoreline change maps / data tables showing 4-5 historic shorelines and long-term shoreline change rates at 40-meter intervals along the coast.

  http://www.mass.gov/czm/hazards/shoreline_change/shorelinechangeproject.htm

Example: Shoreline Change Project





Shoreline Management in Maryland

- **Sea Level Rise Response Strategy (2000)**: established short and long-term objectives and key activities to address erosion, flooding, and inundation

http://www.dnr.state.md.us/Bay/czm/sea_level_rise.html

- **Living Shorelines Stewardship Initiative**: promotes shoreline stabilization alternatives through demonstration projects, field assessments of location suitability, education and outreach programs, and grant/funding support for project construction

http://shorelines.dnr.state.md.us/living.asp

Maryland Information Products

- **Maryland Shorelines Online:** interactive web portal that centralizes information/data on coastal hazards and sea level rise

http://shorelines.dnr.state.md.us/

- **Maryland Shoreline Changes Online**: interactive map viewer that allows users to display a series of historical shorelines and examine site-specific rates of change along closely-spaced transects covering Maryland's Chesapeake Bay, Coastal Bays, and Atlantic coast

http://shorelines.dnr.state.md.us/sc_online.asp

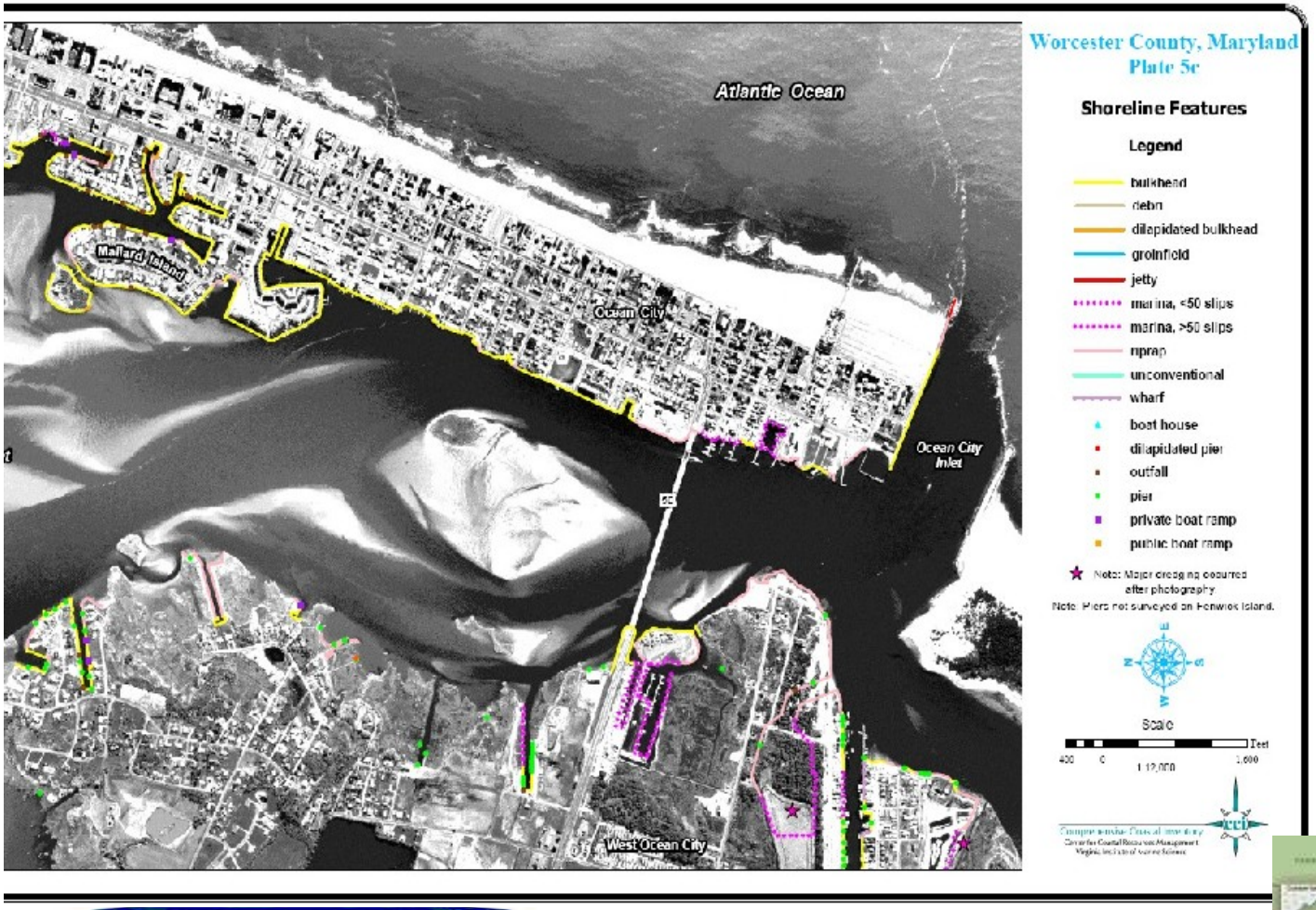
Maryland Information Products

MD/VA Shoreline Situation Report Series – Recently Revised

- County-level "Shoreline Situation Reports" include online maps, summary reports, data tables, photos, metadata, and downloadable GIS data
- Shore-parallel boat surveys and on-ground GPS surveying
- Data related to riparian land use, bank condition, and shoreline features (i.e. erosion control devices and access structures)

http://ccrm.vims.edu/gisdatabases.html

Example: Shoreline Situation Report



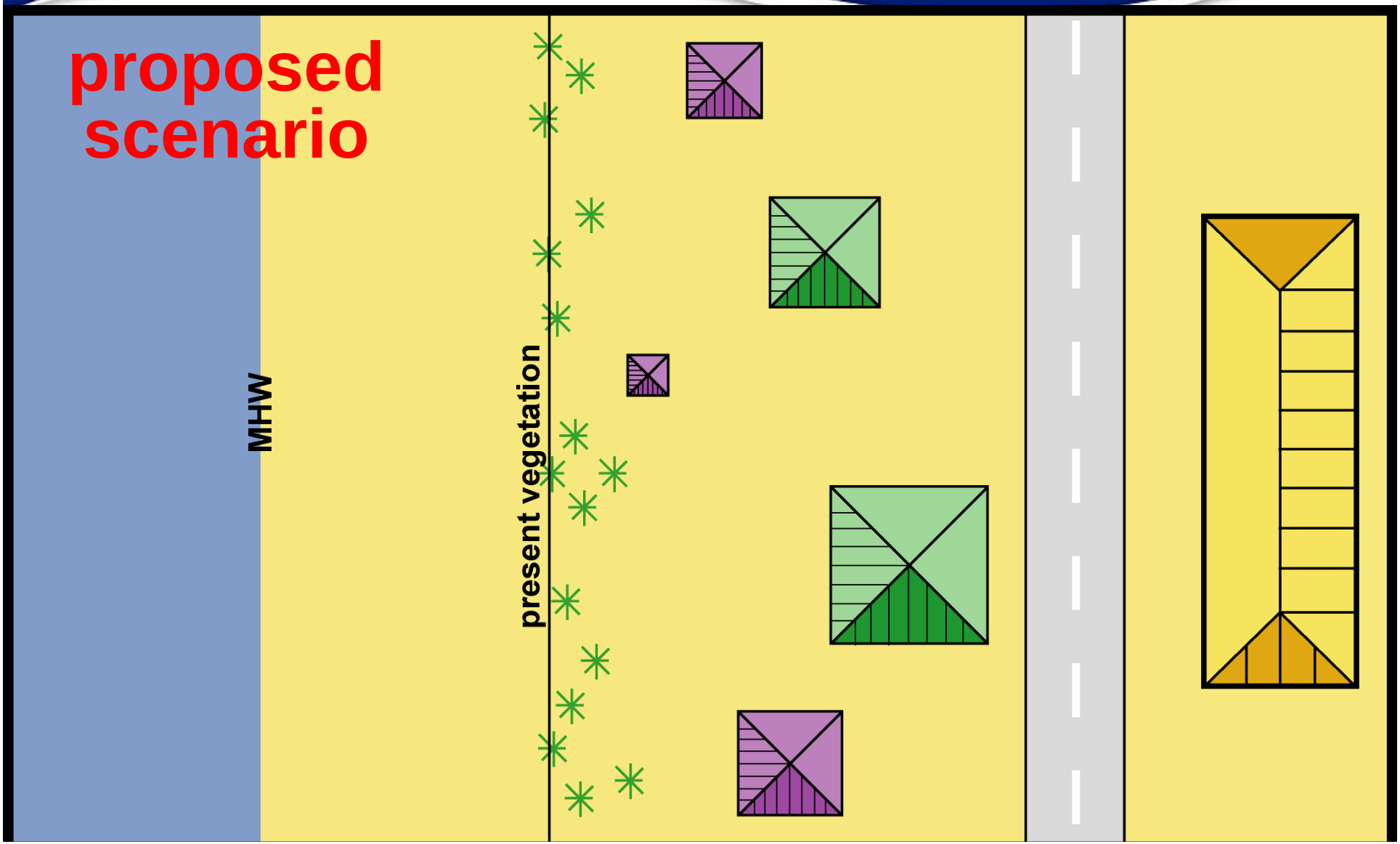
Shoreline Management in North Carolina

- **Science Panel on Coastal Hazards (since 1997)**
  - "Provides the Coastal Resources Commission (CRC) with scientific data and recommendations pertaining to coastal topics."
  - Primarily coastal engineers and geologists
  - Standing committee, ad hoc schedule, no by-laws, staffed by CZM, report to Commission through memos or reports
  - E.g., recently worked to revise "Inlet Zone" boundaries

North Carolina Recent Policy Developments

- **Emergency Orders - Sand bags**
  - Strict height and time limits, other conditions
  - Upcoming expiration of a large number… (June 1)
- **Beachfront Setback Revisions** *(Public Comment Period)*
  - Setbacks based on size and not use
  - No setback relief given for higher erosion rates (large structures)
  - Increased setbacks graduated between 60 and 90 for structures between 10,000 and 100,000 sq ft
  - Exemption provided for infrastructure
  - No cantilevering into setback
  - Newly defined criteria and process for “static line” exceptions

North Carolina Recent Policy Developments



North Carolina Recent Policy Developments

- **Comprehensive Beach & Inlet Management Plan**
  - Jointly funded by DCM and DWR
  - 5 initial goals:
    1. ID and acquire data related to sediment budgets and erosion vulnerability rankings
    2. Define beach and inlet management regions (and sub regions) along coast
    3. Hold and facilitate stakeholder meetings
    4. Develop draft management strategies based on current coastal policy
    5. Final report – but ongoing strategic planning

North Carolina Recent Policy Developments

- **Estuarine Shorelines**
  - **Estuarine Shoreline Stabilization Rule Update Initiative**
    - "Protect fish habitat by revising estuarine and public trust shoreline stabilization rules using best available information, considering estuarine erosion rates, and the development and promotion of incentives for use of alternatives to vertical shoreline stabilization measures."
  - **Estuarine Shoreline Stabilization Subcommittee**
    - 2006 Report: Recommendations and Draft Rule Changes

*** No complete digital estuarine shorelines -** need 2 to begin calculating erosion rates

*** Numerous technical meetings to classify estuarine shorelines (10 types)**

http://dcm2.enr.state.nc.us/Hazards/estuarine_rule%20update.htm

Shoreline Management in Georgia

- Georgia DNR Coastal Resources Division is currently inventorying, quantifying, and mapping armored wetland shorelines (EPA funded)
  - Also studying the feasibility of alternative techniques for shoreline hardening in tidal wetlands / estuaries
- New 50 ft buffer for upland projects that require a Coastal Marshlands Protection Act permit (R. 391-2-3)
  - Rule has a goal of 15% impervious surfaces w/in buffer
  - Applies primarily to commercial, community, and public projects

Florida Coastal High Hazard Study Comm.

- 2005-2006, Final Report available
- 19 members (legislators, agency heads, environmental advocates, property owners, home builders, and the insurance industry)
- Charged with studying/formulating recommendations for managing growth in Coastal High Hazard Areas, defined as the Category 1 hurricane evacuation zones

http://www.dca.state.fl.us/fdcp/dcp/chhsc/final031306.pdf

Florida Coastal High Hazard Study Comm.

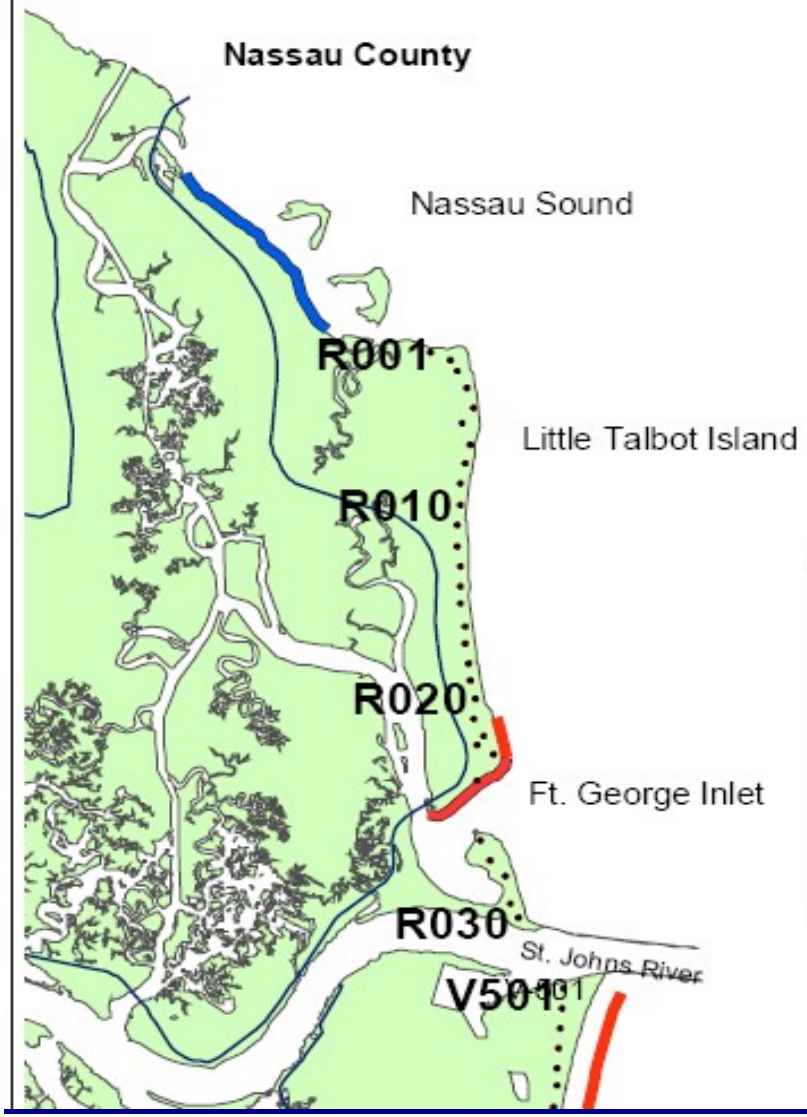
- Recommendations:
  - Improvements to Technical Resources (e.g. LIDAR)
  - Improved Property Owner Notifications of Risks
  - Revise/Strengthen Beachfront Construction Control Lines and Setbacks
  - Revise/Strengthen Post-Storm Emergency Coastal Armoring Rules
  - Permit coordination between DEP and Dept. of Health for onsite septic systems in setback area

Florida Information Products

- "Critical Erosion Areas" Reports
  - Erosion problem areas are classified as critical or non-critical, and county maps and tables depict these areas.
  - Critical Erosion is defined as threat to or loss of:
    - Upland development
    - Recreational interests
    - Wildlife Habitat
    - Important cultural resources
- "Shoreline Change Rate Estimate" Reports
  - Provide MHW shoreline erosion rate estimates on a county-by-county basis

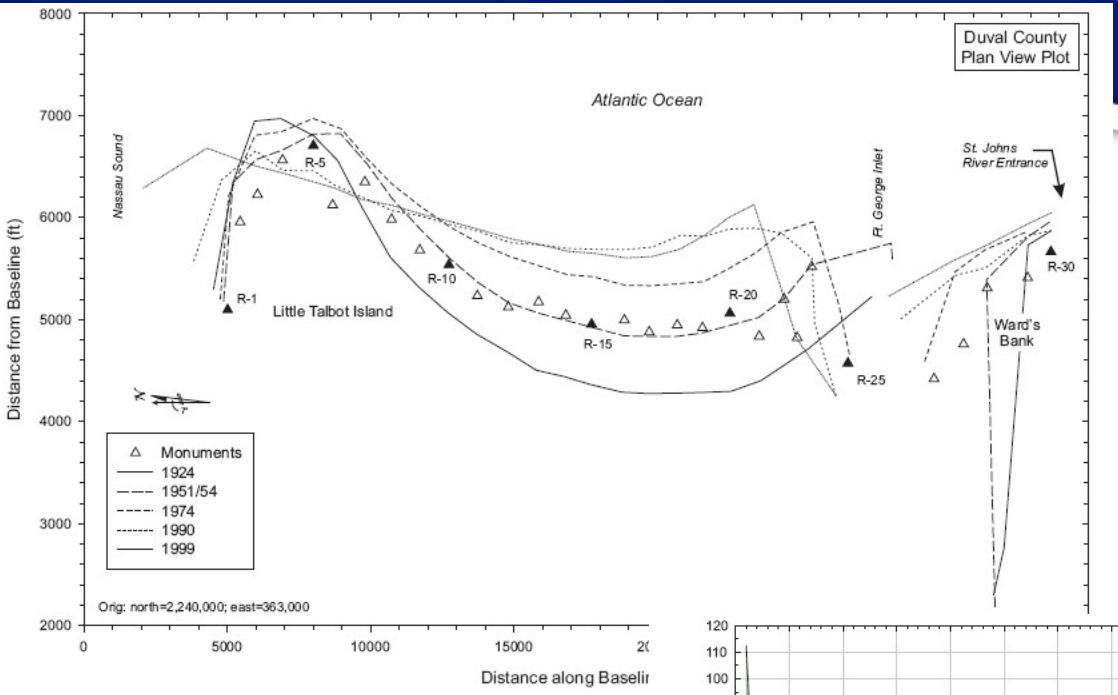
Critical & Non-Critical Erosion Areas - Duval County, FL

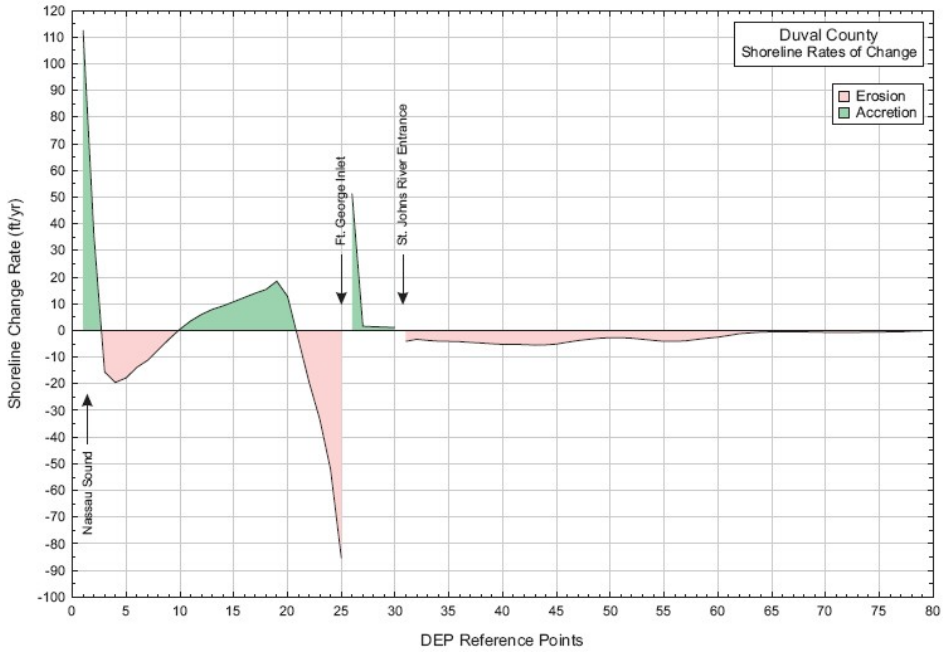
June, 2007



Duval County	
Location	Classification
BIG_TALBOT	Noncritical Inlet
R021-R023	Critical
R023-AIA Bridge	Critical Inlet
V501-R080	Critical

Historical Shorelines and Rates of Change - Duval County, FL





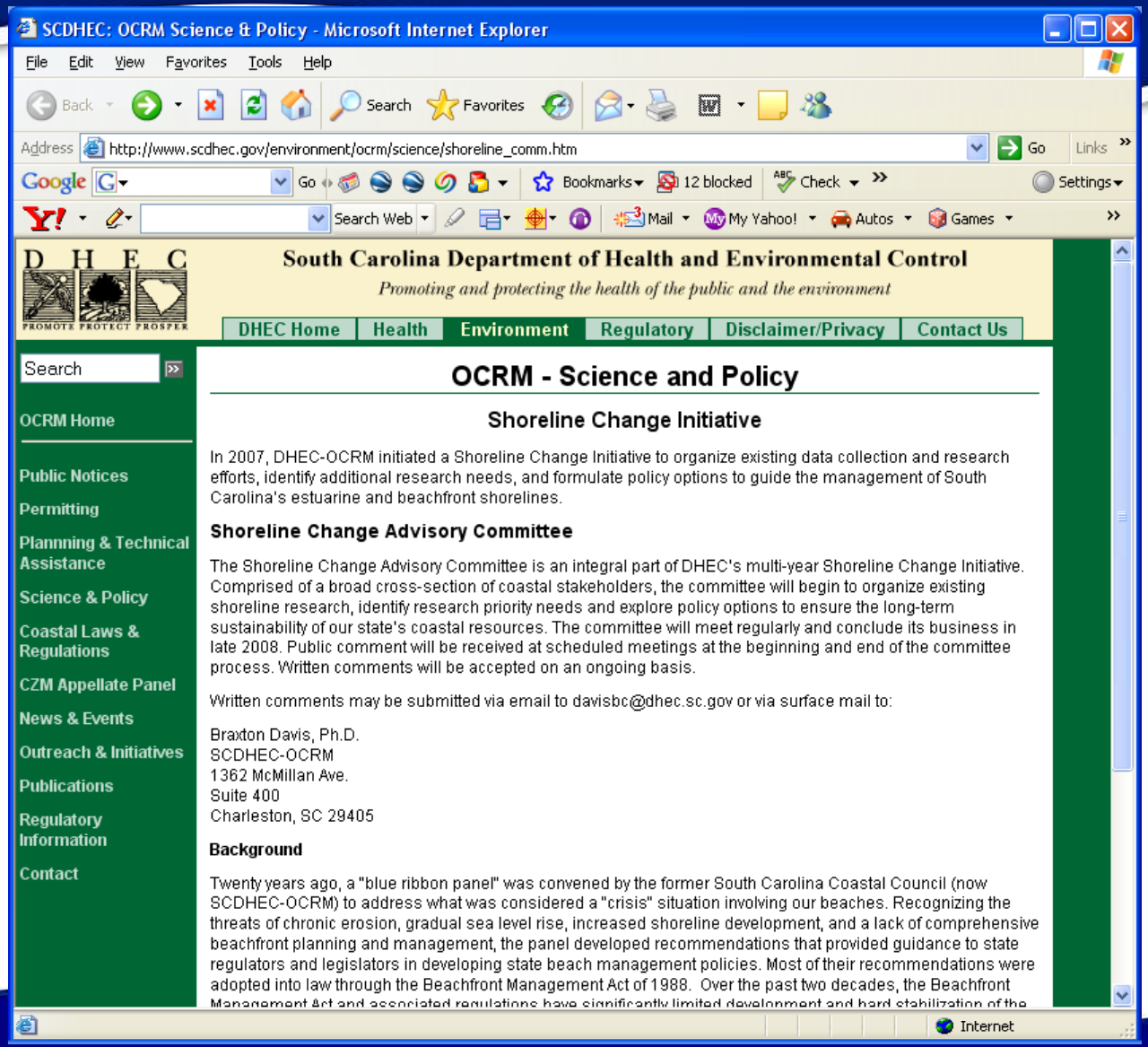
CSO Report - Emerging Sea Level Rise Policies

- Revising public infrastructure siting policies
- Requiring consideration of SLR in site-level project planning
- Reconsidering wetland conservation / restoration policies
- Increasing shoreline setbacks
- Adding “freeboard” above Base Flood Elevation
- Encouraging consideration of SLR in regional/local plans
- Promoting alternatives to bulkheads along sheltered coasts
- Reconsidering land acquisition/conservation priorities
- Developing GIS-based decision-support tools
- Launching new extension / outreach activities

Common Research/Information Needs

- High-resolution topography/bathymetry (LIDAR)
- Guidance/support on inundation and shoreline change modeling and monitoring
- Impacts of accelerated SLR on coastal habitats (wetlands)
- Socio-economic studies, potential impacts to infrastructure
- Role of sea level rise in beach nourishment frequency and volumetric requirements
- Policy analyses related to shoreline “retreat” & armoring

SCI Website



http://www.scdhec.gov/environment/ocrm/science/shoreline_comm.htm